Computer Assisted Medication and Patient Information Interface

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Organization: Emory University
Mechanism: RFA: HS08-269: Exploratory and Developmental Grant to Improve Health Care Quality Through Health Information Technology (R21)
Grant Number: R21 HS 018236
Project Period: December 2009 – September 2012
AHRQ Funding Amount: $299,998

Summary: Although many studies show that the complications and costs of diabetes can be reduced by controlling glucose and other risk factors, many people with diabetes do not achieve adequate control of these factors. Further, there is often a breakdown in information flow between patient and provider. Inadequate information from patients, particularly in the areas of medication adherence and associated adverse events, can lead providers to make poorly informed clinical decisions and provide inadequate or unclear instructions for patients. The goal of the Computer Assisted Medication and Patient Information Interface (CAMPII) project was to develop and test a tool to improve and standardize the flow of information between patients with type 2 diabetes and providers, thereby improving treatment outcomes and reducing complications.

The research team developed a touch-screen computer interface that low-literacy chronic disease patients at Grady Health System Diabetes Center, a municipal hospital specialty clinic, could use to report medication information, hypoglycemic events, and adverse drug interactions. Patients accessed the interface through a computer kiosk called My Medication Helper (MMH), which is designed to collect complete and accurate information. This information was provided to clinicians so they could make more-informed therapeutic decisions for their diabetic patients. A pilot study of the patient interface was designed to inform methods and additional data elements for a full interface evaluation, and findings were also used to improve usability of the interface. A crossover study was conducted with 117 pilot subjects who completed medication, adherence, and hypoglycemia surveys using MMH; completed two paper surveys; and had an interview with a pharmacist regarding their medication use.

A full evaluation of the patient interface used a randomized trial of 239 subjects, 221 of whom completed the intervention. The trial compared the completeness and accuracy of CAMPII to traditional and customized paper instruments, patient medical charts, and the reference-standard of a comprehensive multi-source interview by an experienced pharmacy expert. The research team also assessed the accuracy, acceptability, efficiency, and utility of the patient information interface for both providers and patients.

A provider medication interface was developed based on interviews, testing, and feedback from providers including nurses, endocrinologists, and pharmacists. The purpose of this interface was to support medication management functions, including medication reconciliation (e.g., correcting incoming medication data, entering new drug regimens), and printing of medication instructions and a daily medication schedule that the patient could take home after each visit.

Specific Aims:

- Develop an accessible information computer interface in a municipal hospital diabetes clinic that patients can use to report medication information and adverse drug interactions. **(Achieved)**
- Develop a provider medication interface to support medication management functions. **(Achieved)**
- Assess the accuracy, acceptability, efficiency, and utility of the information interface for both providers and patients. **(Achieved)**

2012 Activities: Dr. Ziemer and his team focused on data quality review and data management activities, review of outcomes, identification of key questions, development of pilot projects to clarify hypoglycemia screening and cross-discipline reliability of adverse events, planning for final publications and reporting, and planning (i.e., grant applications) to advance the project.

As last reported in the AHRQ Research Reporting System, project progress was on track and budget spending was on target. The grant ended in September 2012.

Impact and Findings: Analyses of final data sets are ongoing. Final reviews will focus on assessment of the accuracy, acceptability, efficiency, and utility of the patient information interface for both providers and patients.

In terms of process findings, the research team found that CAMPII was more accurate than traditional paper methods, and compared favorably with both the medical chart and comprehensive interview for medication accuracy. CAMPII was more sensitive for hypoglycemia than all other methods, including the medical chart, with a somewhat higher rate of false positives.

Use of the MMH computer kiosk to acquire medication history was preferred by patients, despite lower rates of familiarity with computers and the fact that it took longer than the paper forms. Although 53 percent of the subjects reported rarely or never having used a computer, 79 percent reported that MMH was easier to use than the paper forms, and 89 percent felt that MMH was more helpful in recalling their medications. Providers felt CAMPII saved time and improved information quality.

Target Population: Adults, Chronic Care*, Diabetes, Racial or Ethnic Minorities*: African-American

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

Business Goal: Knowledge Creation

** This target population is one of AHRQ's priority populations.*